



*Credit:*

Based on previous Fedora presentations from Red Hat and various community members.

Fedora Designs by DianaFong.



Enhance your experience with the Fedora Project



**Chitlesh**

Post Graduate  
Student

**GOORAH**



**Micro-NanoElectronic** in Strasbourg.

Ambassador

Extras (SIGs: SciTech & KDE)

Mentor

Advisor

Kadischi Project

**Fedora**

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**chkconfig Cell\_Phones off**





# What is scheduled:

What  
Who  
Why  
Where  
How

# Fedora



## [ a bit of History ]

**2002 school project at University of Hawaii by Warren Togami**

Collaborative development of a centralized repository.  
“Extras” only for Red Hat Linux

2003 proposal to merge, create bigger project

Fedora Core is Born

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# [ What, ]

A powerful Free and Open Source Operating System

Innovative and Robust

[ a lab for open source development ]

Lab Rules:

1. If you do it, do it in public.
2. Make it new, but make it work.
3. Fail, learn, repeat. As quickly as possible.



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# **[ Primary Principles of Fedora, ]**

**Centralized Collaborative Development**

**Release Early, Release Often ....**

**Mutual Benefit of Community and Company  
....**

**Importance of Upstream ....**

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# **[ Release Early, Release Often, ]**

## **Essential in Open Source Development**

- Improves Developer/User interaction
- Wider testing exposure and feedback sooner
- Stuff happens faster

## **Excitement about Open Source Software**

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# [ Motivation and Benefit ]

## Commercial

- Long term focus
- “Boring” things, Assign someone to do it ....

GCC 4.0, NPTL, O(1) scheduler, FORTIFY\_SOURCE, exec-shield

## Community

- Attention to detail
- Wider testing exposure and feedback sooner
- Improves Developer/User interaction
- Many eyes, wider range of hardware
- Real world situations
- “Fun” things



# **[ Importance of Upstream, ]**

- Whenever possible, get patches into upstream
- Everyone benefits from sharing and collaboration
- We benefit from wider peer review and testing exposure
- Easier long term maintenance

**[ What, ]**

**[ a set of projects ] ....**

**[ building more ways to work together ]**

**[ a promise ]**

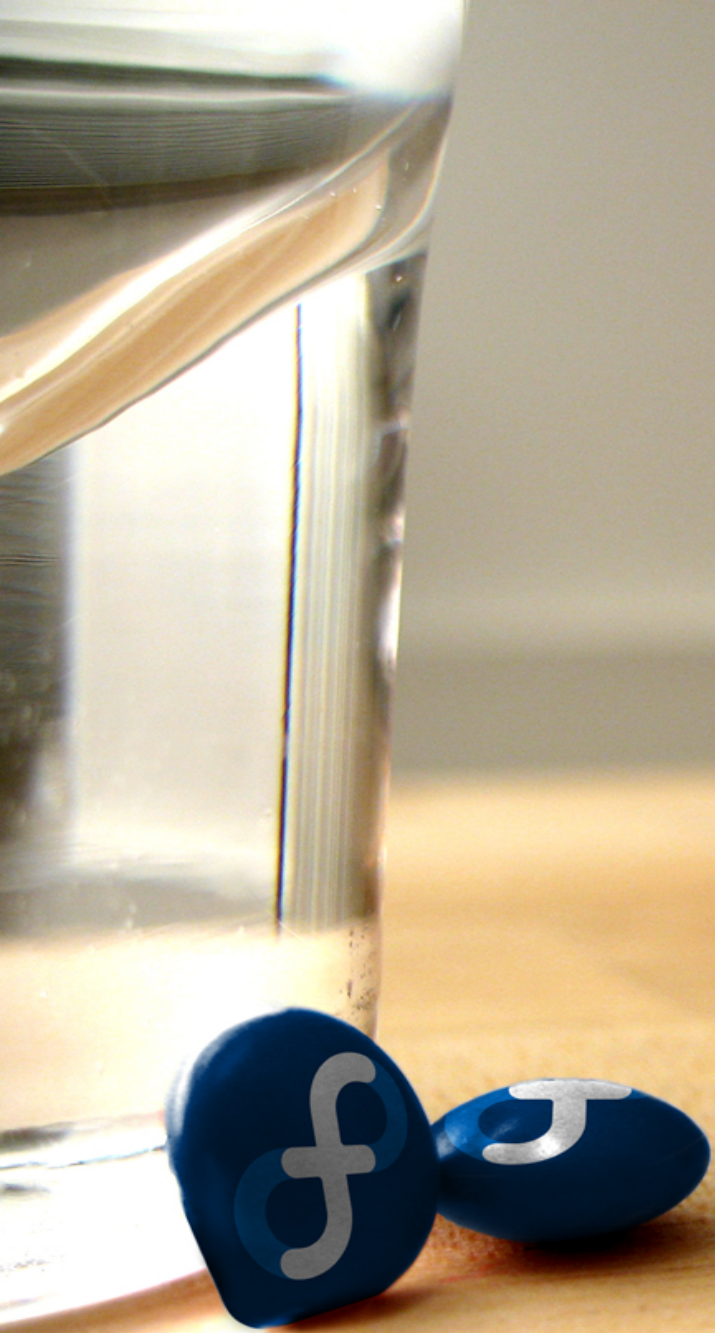
Free as in speech,

Free as in beer.

Today, tomorrow, and always.







Ambassadors  
Artwork  
Directory Server  
Distribution  
Documentation  
Extras  
Kadischi

Legacy  
OLPC  
Rendering  
Plague Build System  
Printing  
Translation  
Websites  
Women  
XEN VM

# Who are you, Fedora ?





## [ Who, ]

**we are all from different countries  
to strive to make fedora core better**



**more at [www.fedoraproject.org/people](http://www.fedoraproject.org/people)**



**RedHat Inc and the Community**

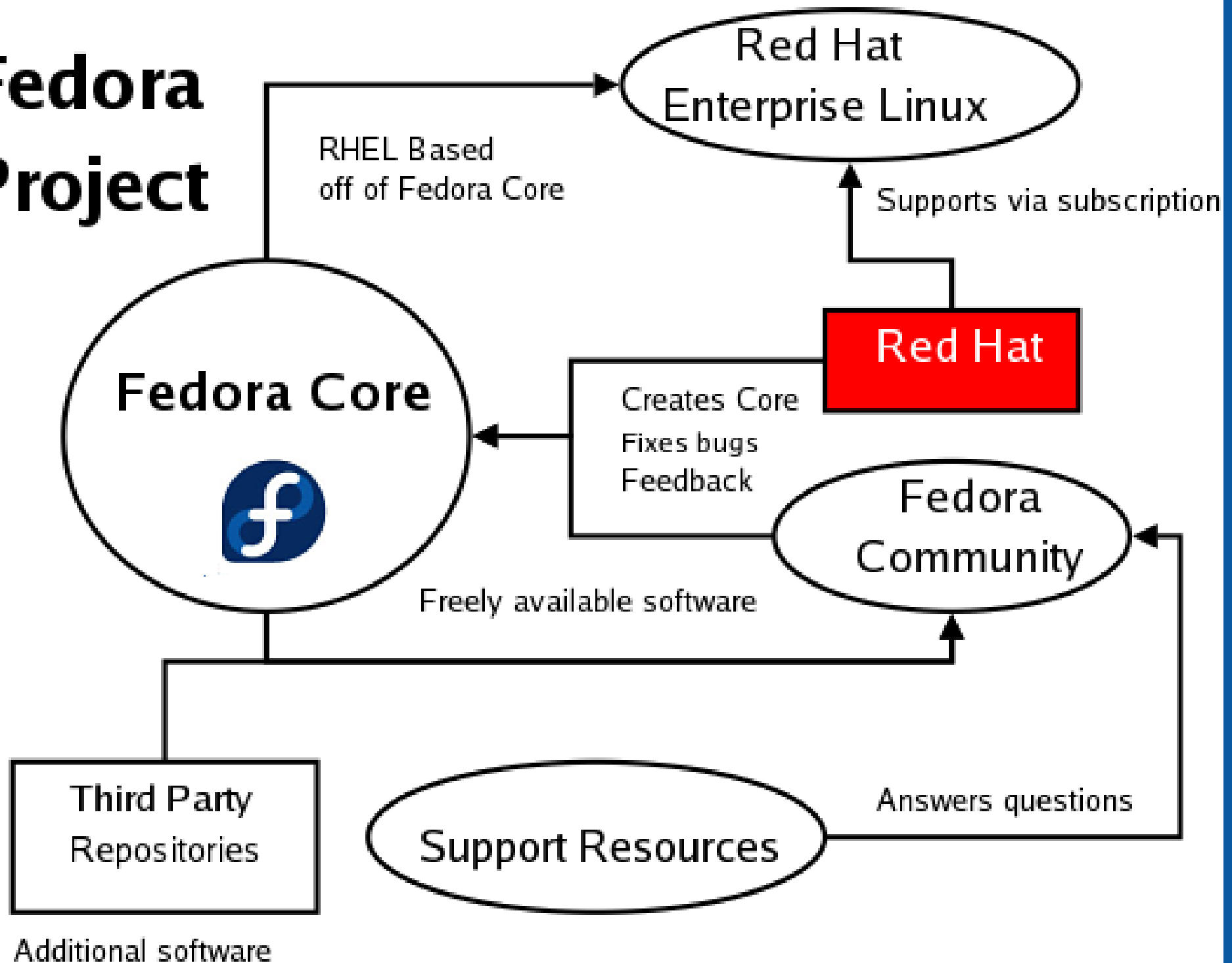
**Fedora Board ....**

### **Community Contributors**

- Hundreds of patch submitters
- Roughly 100 Extras packagers
- Maybe dozen Legacy contributors

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# Fedora Project



# Why, Fedora ?





# [ Why, ]

in FOSS ECO System ....

community says no "boring" packages

Rapid Progress  $\Leftrightarrow$  Release Early and Release Often ....

"Cutting-edge": Still mounting & unmounting?

Translated (and maintained) to many local languages



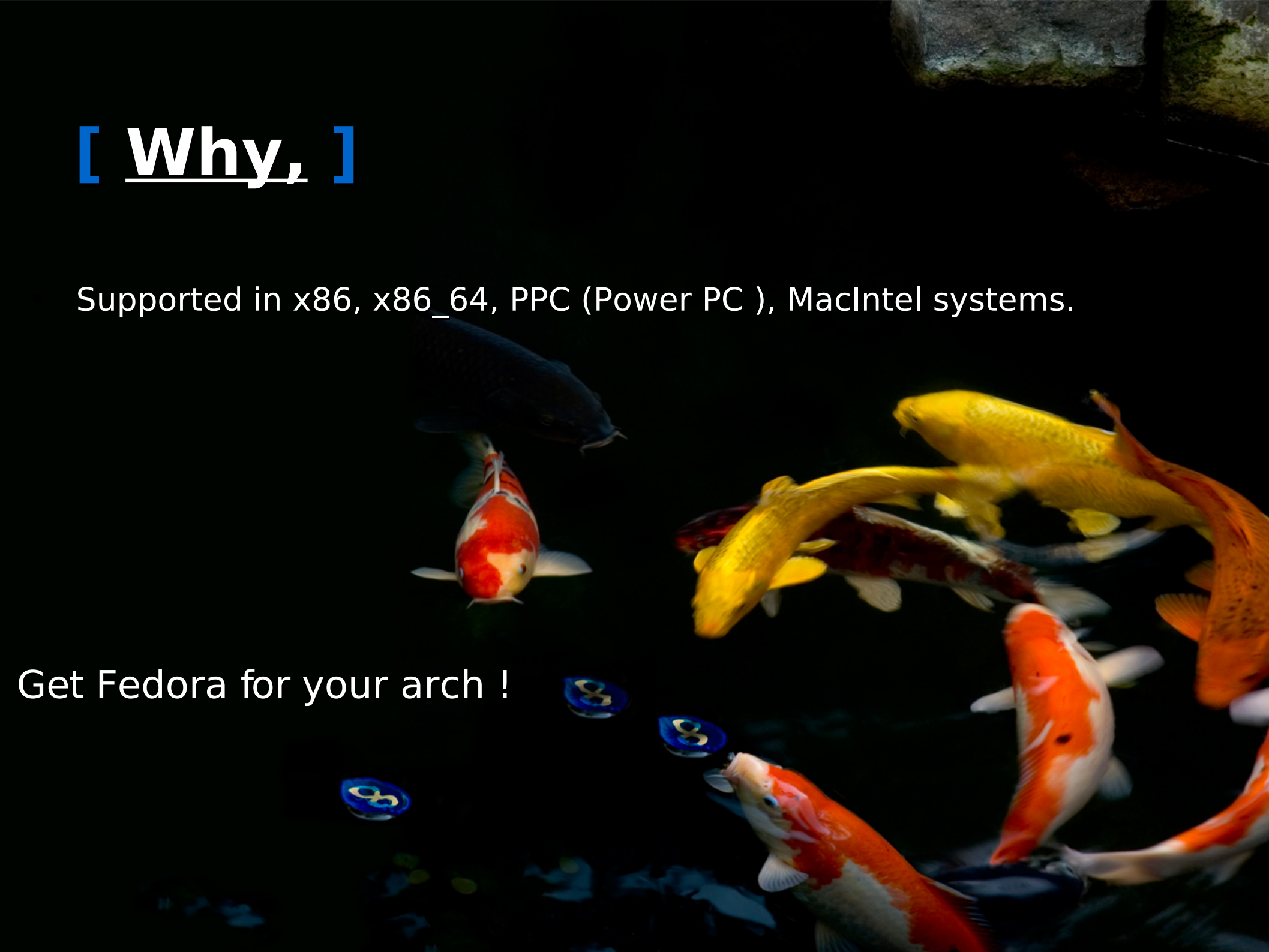
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# [ Why, ]

Supported in x86, x86\_64, PPC (Power PC ), MacIntel systems.

Get Fedora for your arch !





## **[ Why, ]**

- Community ports to Sun Sparc (Aurora) and Alpha available.
- Enhancements and bug fixes reach the users faster. A vicious positive feedback cycle ensures.
- Can update packages easily using yum, pup, pirut.
- Make ogg, not mp3

**[ We'd much rather change the world instead of going with it ]**

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## [ Why, ]

### [ **personal relationships** ]

Are you Mr. Kadischi, from Strasbourg? Can we meet at LinuxTag Wiesbaden ?

Can you review my package “gdmap”, everyone's busy? Ill bring Duvels next time we meet :)

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## **[ A Few Servers Know to run Fedora ? ]**

- **kernel.org.**
- **Sourceforge.net.**
- **Foss.in.**
- **Wikipedia.org (roughly 85% of servers).**
- **Many universities and Web hosting companies**

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## [ Why, ] [ excellence ] :

**Choice :** Latest Desktop Environments, Gnome, KDE & XFCE ....

**RPM, yum, Anaconda:**

Usability, Flexible Installation, Automated Deployment

**Systemtap and frysk**

performance analysis software

developed and sponsored by Red Hat in partnership with others like IBM and Intel

provide a comprehensive framework to benchmark, analyse & improve bottlenecks for performance

frysk create an intelligent, distributed, always-on system monitoring and debugging tool that allows developers and system administrators to monitor running processes and threads.

**Free Java Platform**

gcj part of GCC, Success in FC4: Eclipse, OpenOffice.org, Ant, Tomcat,.

Coming next: Web browser plugin, jonas

**GFS**

Cluster filesystem which is POSIX compatible

originally developed by Sistina has been acquired and open sourced by Red Hat.

Now integrated and available as part of Fedora.

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# [ the choice: gnome 2.15 ]





# [ the choice: KDE 3.5.3 ]





## [ Why ] [ Security ] :

Fedora is an Action leader in many cutting edge Linux security initiatives.

Security features >> Upstream  
hence all Linux distributions take advantage

### [ how ] :

- Exec-Shield
- Position Independent Executables (PIE)
- Executable and Linkable Format (ELF)
- SELinux

### **Z is your friend**

```
chitlesh(home)[0]$ ls -Z
```

```
drwx----- chitlesh chitlesh system_u:object_r:user_home_dir_t chitlesh
```

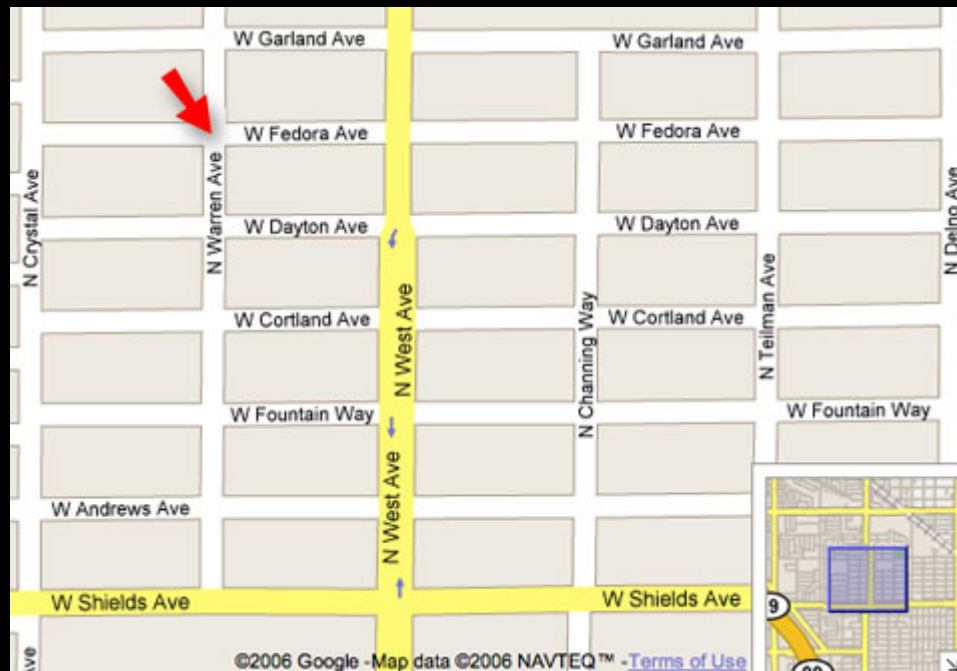
### [ case ] :

Apache is protected in 4 different ways:

- executable, httpd, by PIE and Exec-Shield at compile time
- executable binary file, by ELF hardening
- SELinux policies (prevent roaming, if httpd cracked)



# Where, Fedora ?



N. WARREN AVE  
3600

W. FEDORA AVE  
1400





**More than 110 Ambassadors all over the planet**

**Spread the word about Fedora, Linux and Open Source**

**Be a point of contact:  
for local community  
channel the feedback**

**[ who should be Fedora Ambassadors ? ]**

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[ **who should be**



Fedora Ambassadors

? ]

No need to be a programmer.

Fedora roadmap or philosophy

The goal is to expand user base and contributor base

[ **the best place to start contributing** ]



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# How, fedora<sup>f</sup>

**Ideas and Examples**







**[ how do you join the movement ? ]**

**[ first, you play, and be curious ]**

“get fedora for free, poke it, prod it, use it, share it”

**[ then, you learn ]**

“can I write a script to do this? or this? or that?  
let me search the mailing lists...”

**[ then, you do ]**

“I built a LiveCD for my lab at school”

**[ then, you give back ]**

“let me show everyone how I made my own Fedora Live CD!”

**[ then, you teach ]**

“Your LiveCD doesn’t build properly; here’s a fix.”

**[ you’re free – now go help the others ]**



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[ **How,** ]

[ **how can you help?** ]

Identify clear problems that can be solved.  
Gather together people with skill, time, and desire.

**Decide what's important to you, and make it happen!**

The Fedora name **creates** opportunities!

[ **you are the leaders we've been looking for** ]

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**[ How, ]**

**[ limitless opportunity ]**

There are always more bugs to fix.  
There are always new tools to write.  
There are always new projects to start.

**[ work in the community and build your name ]**

**then ask your interviewer to google your name :)**

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# [ How, ]

## [ building communities ]

**Community is a force multiplier**

- Clear Leadership
- lead by example
- Release early, Release Often
- Show constant forward progress
- Momentum is the key

## [ How, ]

### [ **example** ] : Fedora Artwork

Community

- no longer wants boring icons
- wants to play with “protected” logo
- has already user groups
  - Flickr
  - deviantart

[ **colour palette** ]  
guidelines

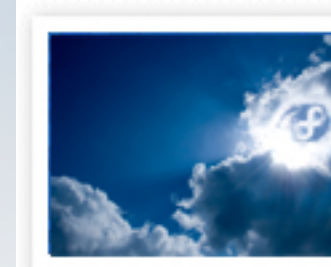
[ **one needs to play with legal** ]

[ **leadership** ]  
mailing list  
wiki pages  
meetings



*design* **Fedora**  
BACKGROUNDS  
for Fedora background channel

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## [ How, ]

- Want to start a new project ?
- Don't know where to contribute ?
- Need advice or review ?

[ **Talk** to the



**Fedora Mentors**

]

Legal advice and guidance

*irc://irc.freenode.net #fedora-mentors*

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## Why?

- Fedora Development needs to forge ahead
- Volunteer developer interest and time
- But some users want to keep using the old version

## Community Development

- Generally for Servers
- Developed by mainly OEM, Consultants, Universities
- Security fixes only

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## End of Life

- FC1 and FC2 as from release of FC6T2
- RHL7.3, RHL9
- New issues (bugs) will be accepted until October 1st 2006

## Supported

- distributions FC3 and FC4

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## Originally Netscape Directory Server

- Bought by Red Hat to provide a enterprise class directory system for the Free software world.
- Made completely Free and Open Source now.
- World class, robust, scalable, open source server based on Lightweight Directory Access Protocol (LDAP)

<http://directory.fedora.redhat.com>

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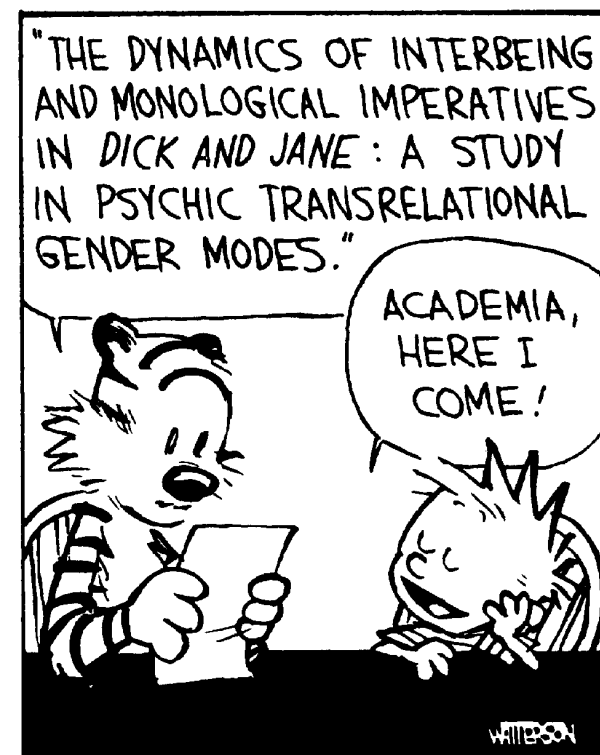
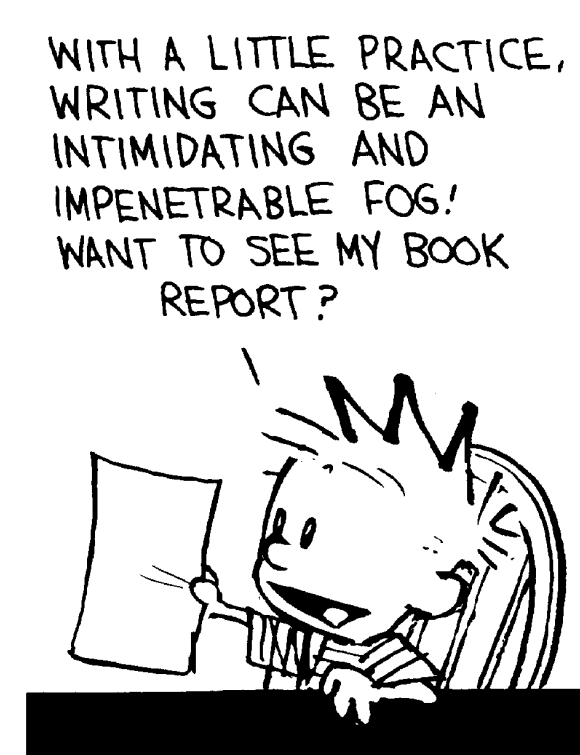
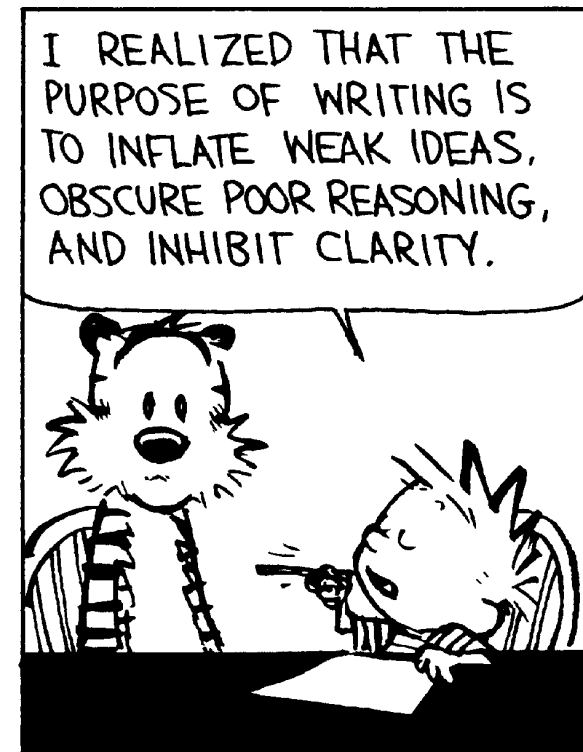
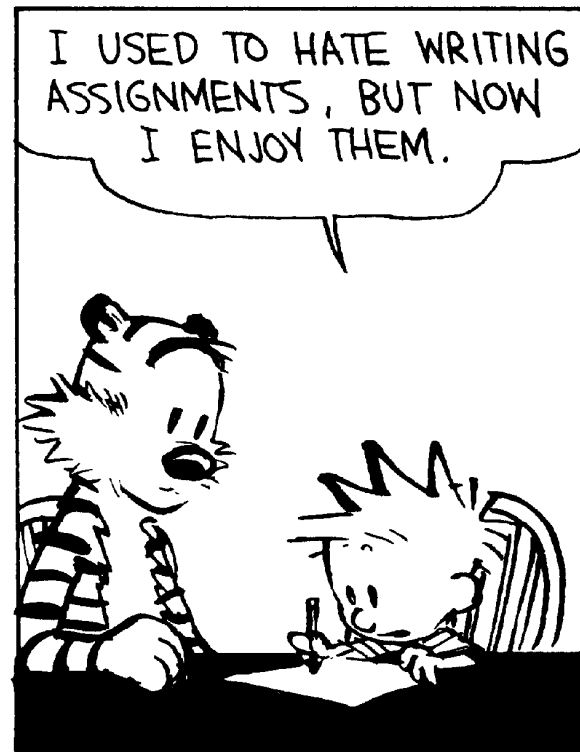
Community building of content

Boring but somebody has to do it

Good way to for non-coders to get involved

create easy-to-follow, task-based documentation for Fedora Core users and developers.

Longer guides are available to cover major topics such as Installation.





- More than three years in the making
  - Core but infinite size
  - Same principles and legal guidelines as Fedora Core.
  - Expanding the efforts of the community
- Supported by Red Hat
  - Infrastructure: CVS, account system, bandwidth, [fedora.redhat.com](http://fedora.redhat.com)
  - Steering committee (vote): Half Red Hat employees, Half External community packagers
- Driven by the community
  - Infrastructure: build hosts, [fedoraproject.org](http://fedoraproject.org)
  - Real heavy lifting by community: build system code
  - Real output: over 1600 source packages and 2300 binary packages in FE as repository
  - Real growth: 3+ new packagers per week since February
- Proof of the model: Red Hat Supported, Community Driven

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- Break -



Coming next :

let's predict the future

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# Future

[ MrTom has left this server ("Fedora Core: Would you run anything else?"). ]



# olpc

One Laptop Per Child

A non-profit association dedicated to R&D of a \$100 laptop

Designed for children, not for system administrators

## [ our goals ] :

if broken, anyone should be able to fix it

Deployment is more important than development

# olpc

The idea is that your desktop environment is more like a home page



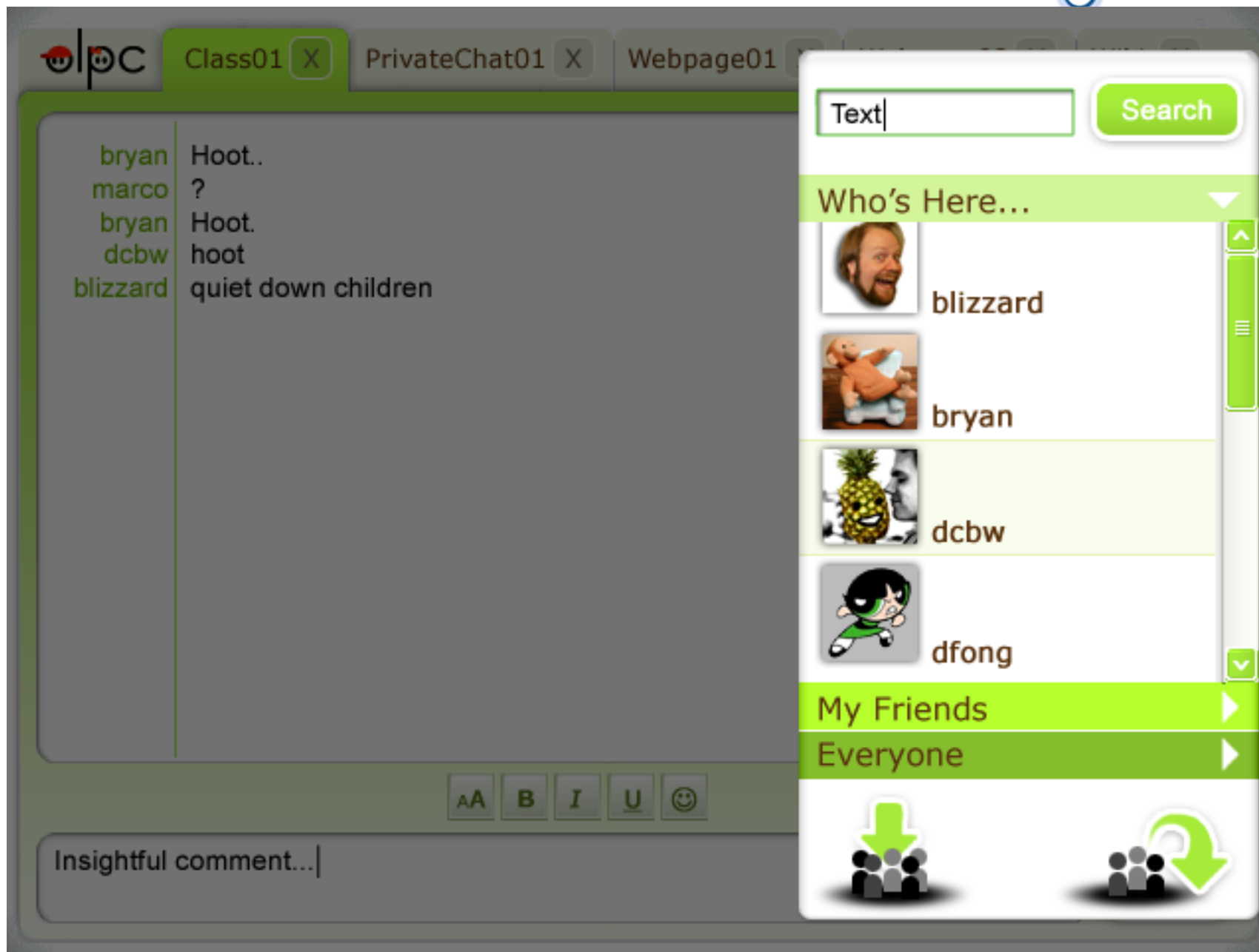
Keeping track of what you're doing  
and what people around you are doing as well





A Prototype





A Mockup

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# olpc

An OS built on:  
Core,  
bits from Extras and  
a dedicated OLPC repository

- o No installer, OS is delivered in two ways
  - for USB sticks, an image which can be used for qemu
  - For installation to the OLPC hardware, a JFFS2 file system image that can be put on the flash ( mtd-utils )
- o OLPC customers can very easily tweak the package selection, provide alternative packages and change how the system is configured.
- o Spit out Fedora Livecds





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# Fedora Core

Roughly 6 months Release Cycle

Release Early, Release Often

Be in-line with upstream projects

such as Gnome/KDE, glibc, gcc, Xen

Dates slip,  
but deadlines promote constant progress



# Fedora Core 6

## Graphically

- New font **DejaVu**, replaced Bitstream vera
- New icon theme, called Echo, still, under development, will remplace the famous Blue Curve
- New general theme **DNA**
- AIGLX directly intégred within X.org 7.1 3D Desktop (AIGLX/Compiz)
- Graphical Tool allow the choice of Metacity or Compiz.





# Fedora Core 6

## RPM and Installation

All packages compiled under Mock et DT\_GNU\_HASH

- Can choose multiple repositories within Anaconda and kickstart during installation
- IPv6 Implementation in Anaconda
- Pupplet, updates notification
- Fedora Core can be installed
  - on Mactel)
  - via USB or FireWire



# Fedora Core 6

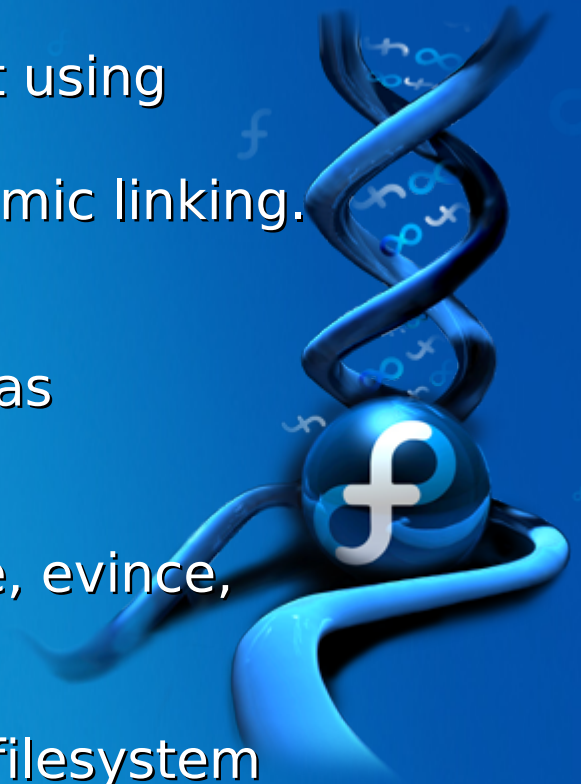
## Performance

All Fedora Core applications have been rebuilt using `DT_GNU_HASH`, which provides a significant performance boost for applications using dynamic linking.

Improvement in package management and dependency solving by making dependencies as modular as possible.

Packages rebuilt in this manner include beagle, evince, gnome-utils, and NetworkManager.

The performance of the Fedora's default ext3 filesystem has been boosted in recent versions of the 2.6 Linux kernel.



# Fedora Core 6

Kernel 2.6.18-1

Gnome 2.16 & KDE 3.5.4

mozilla no longer in Core

SCIM input method enabled for all languages

Eclipse IDE 3.2

printing : hplip replaces hpijs

Totem replaced helix

New tools ( system-config-printer, virt-manager, puppet )

major improvements in Anaconda Installer and NetworkManager





# **[ Fedora Core >= 6, ]**

Open core to community

Unleash KDE => KDE SIGs

Community Benefit

reward for proven contributors

get upstream developers involved

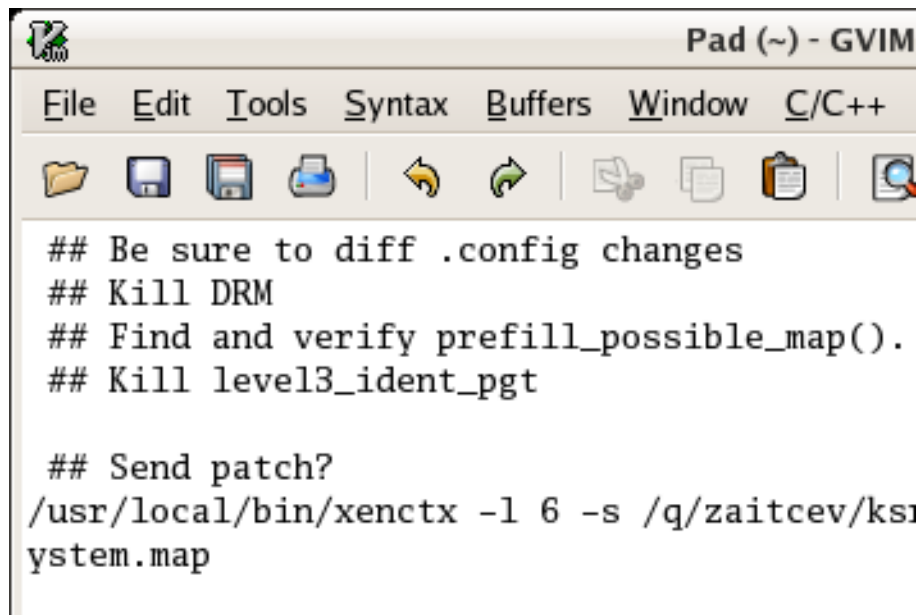
New fonts in rawhide ....

New bluecurve icons ....

introduction of dogtail, from RedHat's in-house tools  
a GUI test tool with automation framework (python) ....



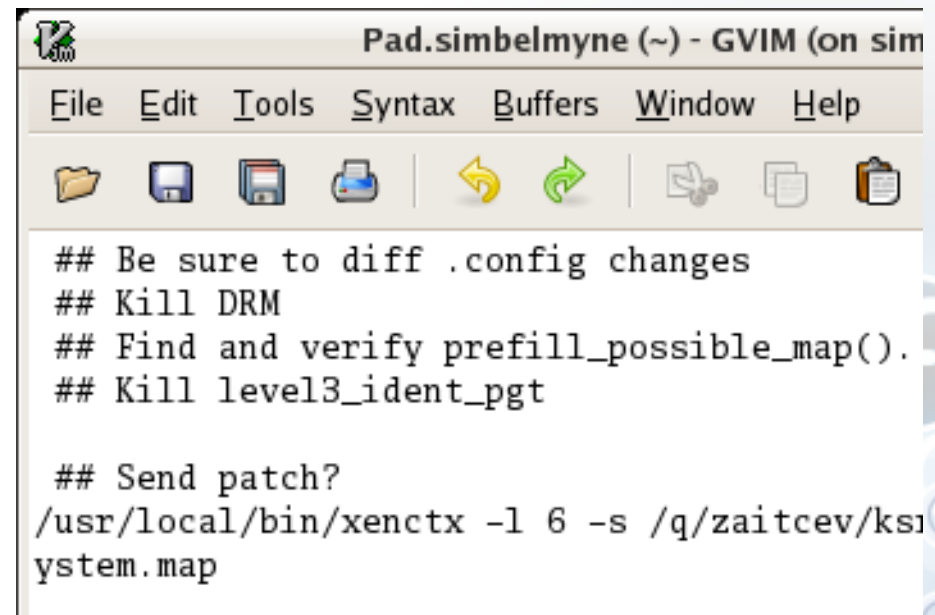
# [ Few fonts, call for testing ]



```
## Be sure to diff .config changes
## Kill DRM
## Find and verify prefill_possible_map().
## Kill level3_ident_pgt

## Send patch?
/usr/local/bin/xenctx -l 6 -s /q/zaitcev/ks
ystem.map
```

Before



```
## Be sure to diff .config changes
## Kill DRM
## Find and verify prefill_possible_map().
## Kill level3_ident_pgt

## Send patch?
/usr/local/bin/xenctx -l 6 -s /q/zaitcev/ks
ystem.map
```

After

This new version of the DejaVu fonts supports Latin, Greek and Cyrillic, providing adequate support for a large group of languages

# [ New Bluecurve Icons ]



The FedoraArtwork are working on

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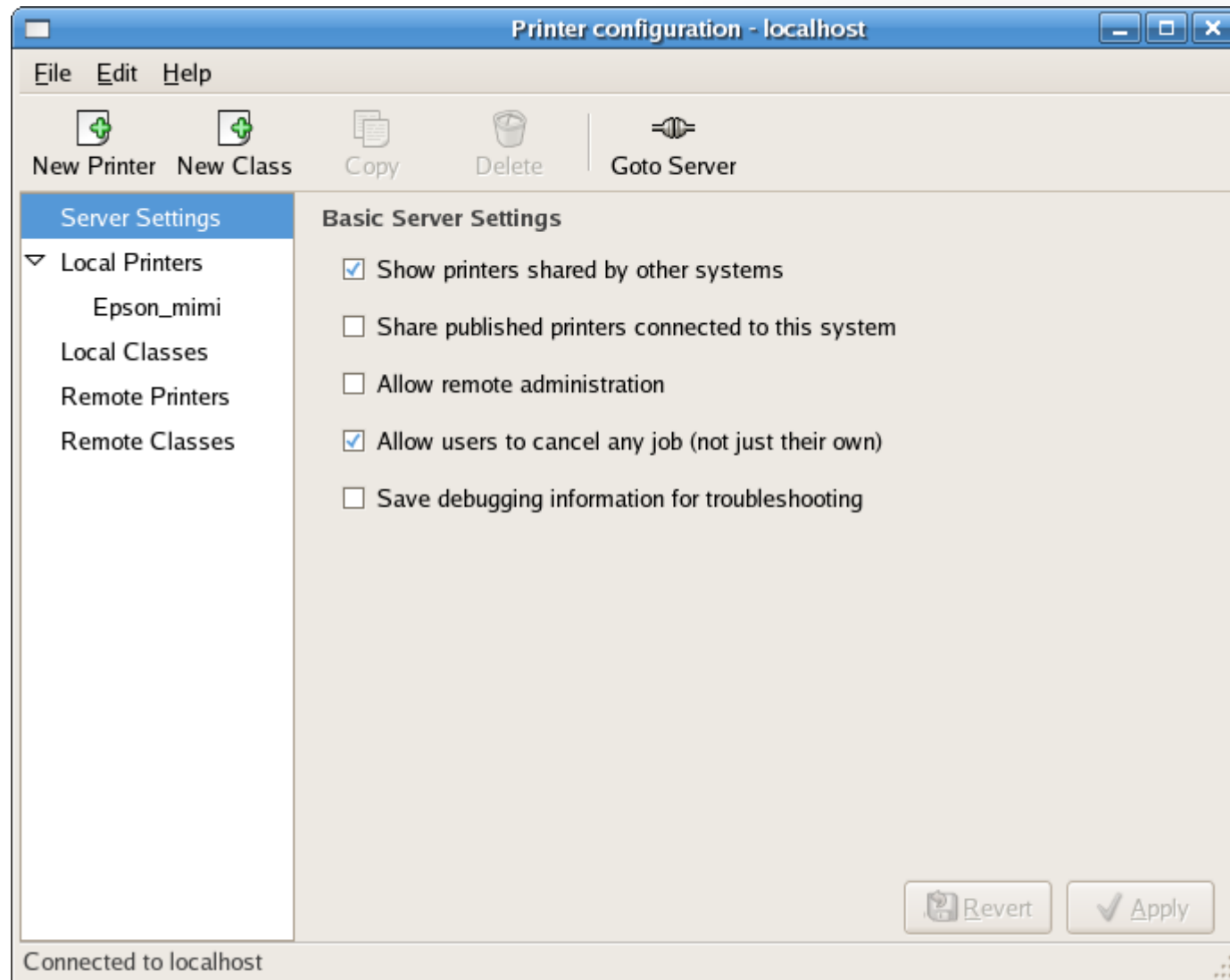


# [ Printing, ]

Create a good Printing experience on Fedora

Simple GUI:  
system-config-printer

Like any other  
system-config-\*





# [ Translation, ]

Translate Software, Documentation and Websites associated with the Fedora Project

Translations are done via PO files

we have 74 Languages Teams working

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# [ Rendering, ]

Focuses on enhancing the rendering model  
of the Fedora desktop

to provide a smoother  
faster  
prettier and  
more pleasant user experience

Enhancing technologies like  
Cairo, Pango, OpenGL and Composite extension to X

AIGLX ....



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- Testing -

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# [ Testing, ]

~~Fedora is just RedHat's beta test for RHEL~~

introduction of dogtail and other scripts soon in fedora

- Under the 108 project
- Opensource other scripts
- Makes testing easier
- Available to FOSS ECO System

same tests on FC6, RedHat runs on RHEL

- Community Benefit
- Formal and Organized Testing

Use and make opensource software tests

Make Fedora Awesome



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## [ Testing ]

Novice but enthusiastic fedora core user

Fedora updates-testing repository

fedora-test mailing list and the relevant bugzilla reports

> Fedora Bug Triage ....

Fedora development repository (named Rawhide)

- daily release of new development updates in Fedora Core.  
break at any time and without warning.

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# [ Testing, Test Releases ]

Fedora Core 'test' releases

slightly more stable than testing Rawhide

- 3 test releases before every final release of Fedora Core.
- common bugs
  - Schedule

Test 1 comes out in the middle of the cycle

Test 1 : horrible

Test 2 : pretty good, most major features included

Test 3 : we want to fix other things

Not meant for production

## [ Bug Triage ] :

Manage the flow of bug reports filed against fedora projects

Prevent other members being overwhelmed by bug reports

Eliminate trivial bugs

Remove or correct flawed or inadequate reports

Make sure that maintainers are able to get things done

LUGs are invited to participate in the BUG Triage  
even for one or two days

# **[ Xen Virtual Machine, ]**

- Run multiple instances of OSes simultaneously
- Multitasking at the OS level
- Guarantee isolation between OSes
- Provide controlled resources sharing
- Xen is being integrated in Linux upstream
- as a sub arch of the supported architectures (i386, x86\_64)
- Xen runs as an hypervisor
- kernel instances call the hypervisor for resources
- the hypervisor uses linux for the drivers



Create the best possible interface  
for users and contributors on the internet

Consolidate all key Fedora websites onto one uniform scheme

Maintain the contents

Making the sites be as fun and exciting as the project present

Coordination with Fedora Documentation Project,  
Fedora Artwork and  
Fedora Marketing Project

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Help all Fedora Contributors get their stuff done with minimum hassle and maximum efficiency

Under this umbrella:

- Extras Build System
- Fedora Account System
- CVS repositories
- mailing lists
- Websites Infrastructure



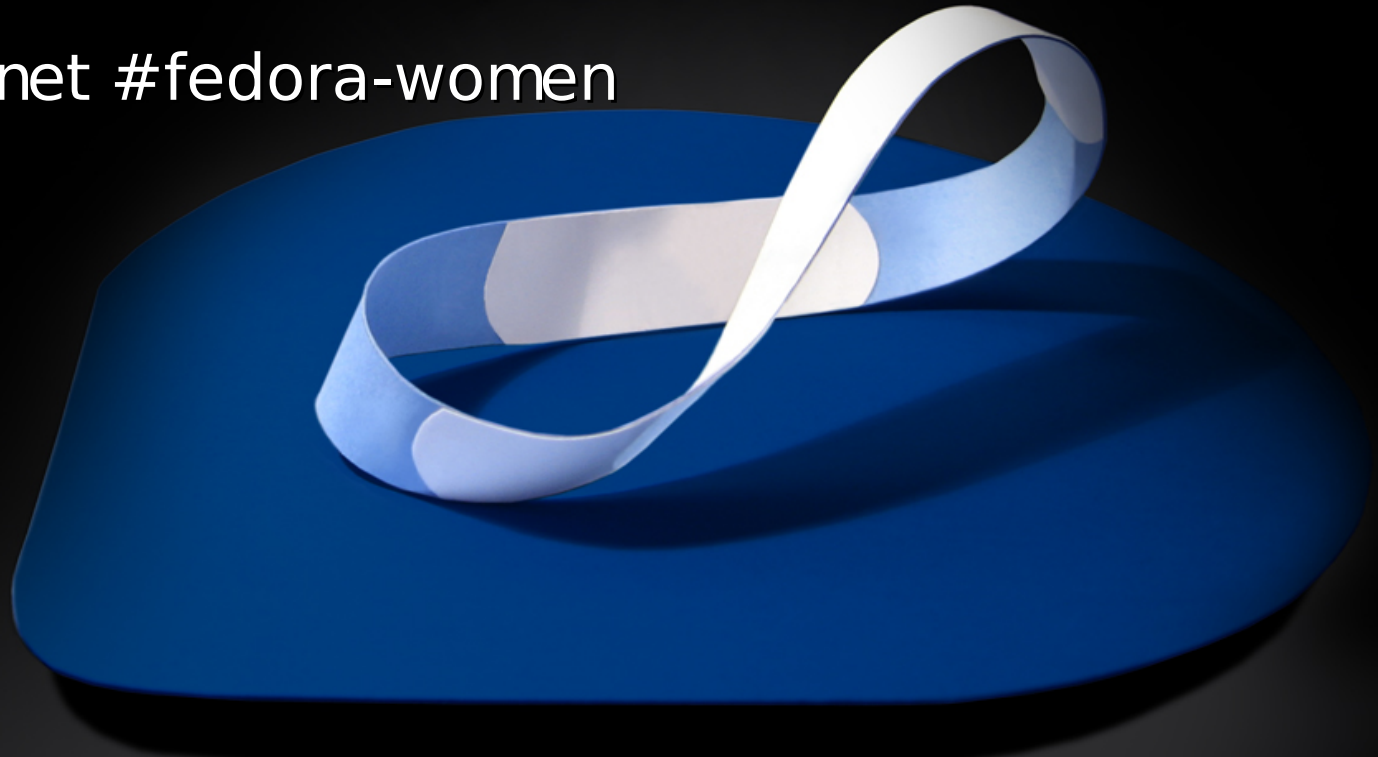
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# [ Women ]

A large portion of the Fedora Userbase is made up of Women  
either System-administrators,  
home-users  
or even Fedora Contributors

A Fresh New Project  
Own mailing list  
On [irc.freenode.net](https://irc.freenode.net) #fedora-women



# [ Kadischi ]



<http://fedoraproject.org/wiki/Kadischi>

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## [ Ka disc hi, The Fedora Live CD Project ]

An application for Fedora-based LiveCD generation.

From Fedora repositories, it outputs a livecd iso image.

One can easily create its own customized Fedora based LiveCD.

Moving out of the early stage of its development

a low-risk strategy to allow people try Fedora Core

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# **[ Kadischi, The Fedora Live CD Project ]**

Heavily based on Stateless Linux.

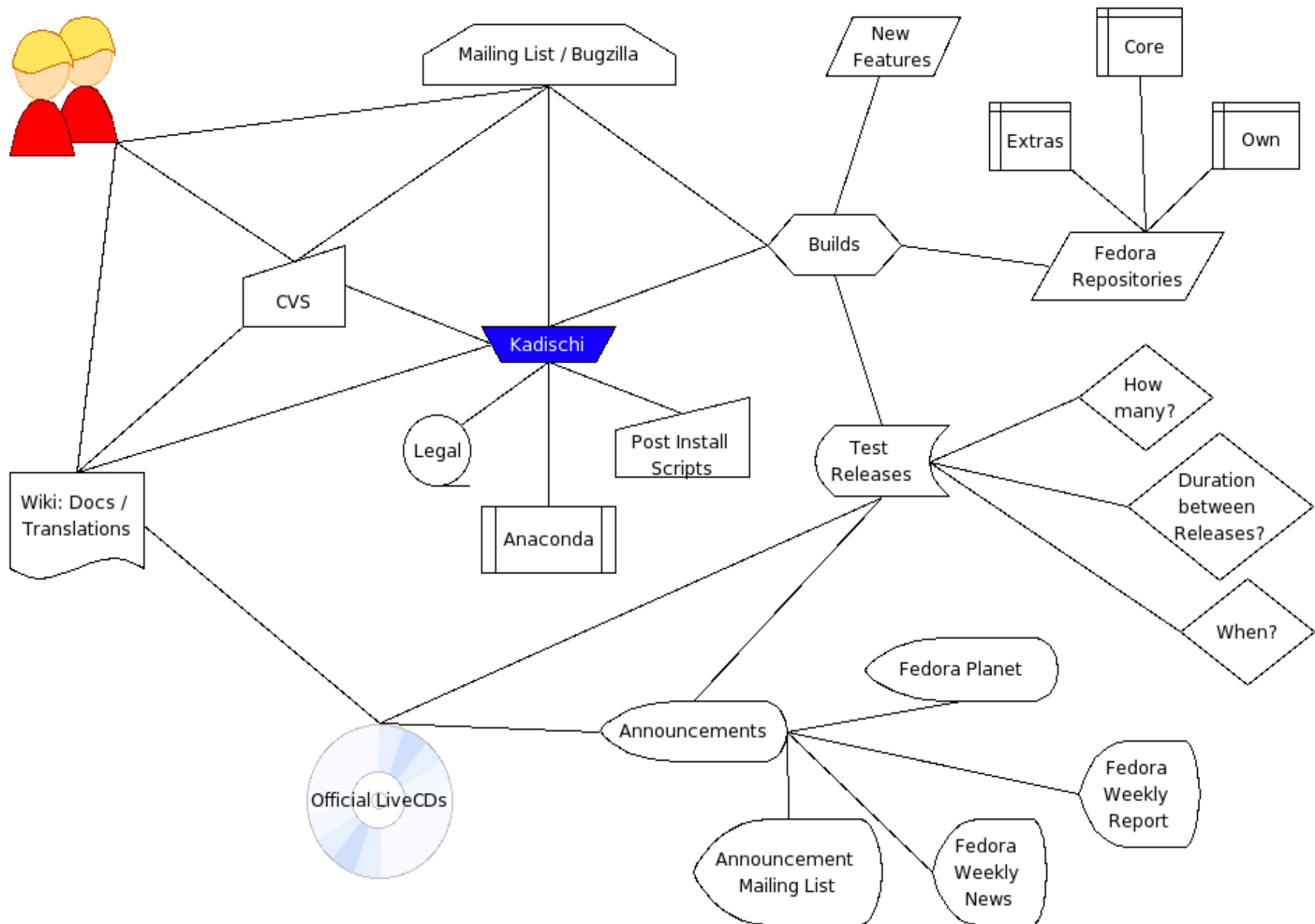
Anaconda, kickstart files, Squashfs Compression

XEN Fedora Livecds

One can include its post install scripts.

Arch: i386 and x86\_64

Stay Tuned at <http://fedoraproject.org/wiki/Kadischi>





# [ Kadischi, The Fedora Live CD Project ]

A screenshot of the "Kadischi: The Fedora LiveCD Tool" window. The window has a title bar with a red 'X' icon and standard window controls. The main area is divided into several sections. On the left, there's a large blue circular logo with a white 'f' and the text "Kadischi". Below this, a description states: "Kadischi is a Fedora Live CD Creator tool. It takes a Fedora Core repository and outputs a LiveCD iso." There are input fields for "Repository:" and "LiveCD iso:". Below these, a section titled "Kickstart files" has two radio buttons: "Some predefined kickstart files for you." (selected) and "Use my Kickstart file." (unselected). The selected option has a dropdown menu showing "Minimal", "Xen", and "GnomeDesktop". Below this is an empty text input field. To the right of the "Kickstart files" section is a section titled "Advanced Features" with two checkboxes: "force creation" (unchecked) and "text based" (unchecked). Below these is a label "Extras Arguments:" followed by an empty text input field. On the far right, there's a section titled "Examples" with a sub-section "Post install Scripts". This section contains two sub-sections: "Non-root Account" with "User:" and "Password:" input fields, and "Auto-Login" with an unchecked "Enable AutoLogin" checkbox and a "Countdown" dropdown set to "5 Secs". Below this is a "Services" section with two radio buttons: "Enable all" (unchecked) and "Disable all" (checked). At the bottom of the window are buttons for "Help", "OK", and "Cancel", and a "Legal Notice" link.

Mockup of the Next  
GUI of Kadischi

Any help will be greatly  
appreciated in this project

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# Stay Tuned !

[www.fedoraproject.org](http://www.fedoraproject.org)

[www.fedoraproject.org/people](http://www.fedoraproject.org/people) [ Fedora contributors blogs ]

[www.fedoranews.org](http://www.fedoranews.org) [ Fedora News, each Monday ]

Announce Mailing List





## Community Sites

- <http://fedoraforum.org/>
- <http://fedora-france.org>
- <http://fedorasolved.org/>
- <http://fedoraunity.org>

Dozens of Mailing Lists at

**<http://fedoraproject.org/wiki/Communicate>**

**[cvs.fedora.redhat.com](http://cvs.fedora.redhat.com)**

**[bugzilla.redhat.com](http://bugzilla.redhat.com)**



## [irc.freenode.net](http://irc.freenode.net)

#fedora  
#fedora-devel  
#fedora-docs  
#fedora-extras  
#fedora-fr  
#fedora-livecd  
#fedora-mentors  
#fedora-mktg  
#fedora-python  
...and many more

# 3 Last Big Decisions Taken

Fedora Logo  
Mono in Fedora Extras  
No Fedora Foundation



# [ Fedora WordMark, ]

the Fedora wordmark is structured, friendly, and open  
[like the community]

lowercase "f" is  
less corporate

open shapes are  
friendly and open

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rounded corners are similar  
to the "f" in the symbol

"a" is similar to  
the talk bubble shape  
in the symbol

## [ Fedora Logo, ]



- Protected
- Trademarked

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# **[ Fedora, Mono and OIN, ]**

**OIN:** Open Invention Network

Prominent Members include:

RedHat, Sony, Novell, IBM and Philips

**Idea:**

- throw a bunch of patents in a pool
- Make those patents available to open source developers

A set of Commerce ONE patents, (potential scary patents)

**Mono** is on the OIN list of “protected patents”

Novell bought after bankruptcy.

Mono is included in FE as from January 2006  
beagle, f-spot, tomcat



# [ **No Fedora Foundation,** ]

Foundation, to act as a repository for patents  
that will protect the open source community

Contributors preferred – an intellectual property repository

Creation of a legal entity

The killer question was:

**“What could a foundation accomplish that the Fedora Project with strong community leadership, could not accomplish ?”**

New Fedora project leadership model include  
community members directly

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# Fedora Distribution

Various aspects of distributing  
Fedora on physical media

Distribution Programs:  
Free Media  
Sponsored Media  
Vendors

Take your Free **fedora**  DVD



# Questions & Answers



Take your Free **fedora**  DVD



# BUG me at

[chitlesh@fedoraproject.org](mailto:chitlesh@fedoraproject.org)

<http://fedoraproject.org/wiki/ChitleshGoorah>





**I don't want to show you**

These ...

# About YUM !





# **What is YUM ?**

**a software package manager.**

**a tool for installing, updating, and removing packages and their dependencies on RPM-based systems.**

**automatically computes dependencies and figures out what things should occur to install packages.**

**makes it easier to maintain groups of machines without having to manually update each one using rpm.**

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# Yum kernel handling plugin

A “installonlyn” yum plugin, within the yum package which only retains the latest two kernels in addition to the one being installed when you perform updates on your system.

`/etc/yum/pluginconf.d/installonlyn.conf`

```
[main]
tokeep = 2
enabled = 1
```

Easy to tuned :)

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# Yum & Headers

```
[main]
cachedir=/var/cache/yum
keepcache=0
debuglevel=2
logfile=/var/log/yum.log
pkgpolicy=newest
distroverpkg=redhat-release
tolerant=1
exactarch=1
obsoletes=1
gpgcheck=1
plugins=1
metadata_expire=1800
```

**file:///etc/yum.conf**

```
# PUT YOUR REPOS HERE OR IN separate files named file.repo
# in /etc/yum.repos.d
```

# YUM-UTILS

**su -c 'yum install yum-utils'**

Enter the root password when prompted.

# Kernel in FC5





# **Know your FC5 Kernel**

2.6 series of the Linux kernel

Fedora Core may include additional patches for  
Improvements,  
bug fixes, or  
additional features.

Hence, the Fedora Core kernel may not be line-for-line  
equivalent to the so-called vanilla kernel from the  
<http://www.kernel.org/>

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# Know your FC5 Kernel

Default FC5 Kernel : **kernel-2.6.15-1.2054\_FC5**

Actual FC5 Kernel : **kernel-2.6.18-1.2200\_FC5**

To retrieve a log of changes to the package:

```
rpm -q --changelog kernel-`(uname -r)`
```

To obtain a list of these patches, :

download the source RPM package

```
yumdownloader --source kernel-`(uname -r)` .src.rpm
```

and execute:

```
rpm -qpl kernel-`(uname -r)` .src.rpm
```

We can't wait to impress you,

The **fedora**<sup>™</sup>  team

